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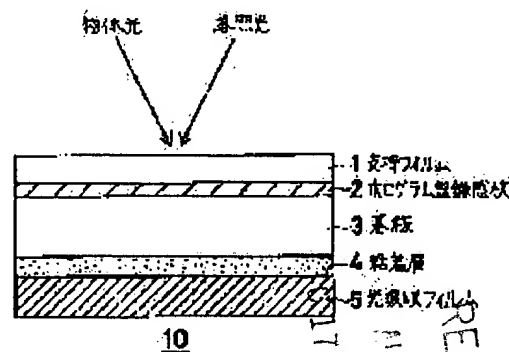
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(54) DRY PLATE FOR TRANSMISSION TYPE HOLOGRAM PHOTOGRAPHING AND ITS PRODUCTION AND APPARATUS THEREFOR

(57) Abstract:

PROBLEM TO BE SOLVED: To provide a dry plate for transmission type hologram photographing which contributes to the drastic simplification of production stages and is adaptable to a laminating device as well by forming a halation preventive layer of a dry film form.

SOLUTION: This dry plate consists, successively from object light and reference light incident side, a supporting film 1/hologram recording photosensitive material 2/substrate 3/tacky adhesive layer 4/light absorption film 5. The dry plate may consist, in turn, of the supporting film 1/hologram recording photosensitive material 2/substrate 3/light absorption tacky adhesive layer/supporting film 1. The separator of hologram recording photosensitive material film consisting of the supporting film 1/hologram recording photosensitive material 2/separator is peeled and the separator of a tacky adhesive treated light absorption film consisting of a separator/tacky adhesive layer 4/light absorption film 5 is peeled and while the substrate 3 is supplied, both surfaces thereof are respectively laminated in order to obtain such layer constitution.



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CLAIMS

[Claim(s)]

[Claim 1] The dry plate for penetrated type hologram photography characterized by becoming order from a hologram record sensitized material / substrate / adhesive layer / optical-absorption film at least from a body light and reference-beam incidence side.

[Claim 2] The dry plate for penetrated type hologram photography characterized by a hologram record sensitized material according to claim 1 consisting of a photopolymer which has tackiness.

[Claim 3] The dry plate for penetrated type hologram photography characterized by an optical-absorption film according to claim 1 consisting of a film with which tinting processing of the optical density in record wavelength was carried out two or more.

[Claim 4] The dry plate for penetrated type hologram photography which a substrate according to claim 1, an optical-absorption film, and at least one refractive index of abbreviation of an adhesive layer carry out, are in the refractive index of a hologram record sensitized material, and is characterized by things.

[Claim 5] The dry plate for penetrated type hologram photography with which an adhesive layer according to claim 1 is characterized by being formed possible [sublation] after hologram exposure.

[Claim 6] The dry plate for penetrated type hologram photography characterized by becoming order from a hologram record sensitized material / substrate / optical-absorption adhesive layer / support film at least from a body light and reference-beam incidence side.

[Claim 7] The dry plate for penetrated type hologram photography characterized by a hologram record sensitized material according to claim 6 consisting of a photopolymer which has tackiness.

[Claim 8] The dry plate for penetrated type hologram photography characterized by carrying out tinting processing of the optical-absorption adhesive layer according to claim 6 so that the optical density in record wavelength may become two or more.

[Claim 9] The dry plate for penetrated type hologram photography which one [at least] refractive index of abbreviation of a substrate according to claim 6 or an optical-absorption adhesive layer carries out, is in the refractive index of a hologram record sensitized material, and is characterized by things.

[Claim 10] The dry plate for penetrated type hologram photography with which an optical-absorption adhesive layer according to claim 6 is characterized by being formed possible [sublation] after hologram exposure.

[Claim 11] In the production technique of the dry plate for penetrated type hologram photography given in 1 term either of the claims 1-10 -- After exfoliating the separator of the hologram record sensitized material film which supplies a substrate and becomes one field of the supplied substrate from a support film / hologram record sensitized material / separator A hologram record sensitized material film is laminated from a hologram record sensitized material side. The adhesion processing optical-absorption film which becomes the field of another side of the supplied substrate from a separator / adhesive layer / optical-absorption film, Or after exfoliating the separator of the optical-absorption binder film which consists of a separator / an optical-absorption adhesive layer / a support film The production technique of the dry plate for penetrated type hologram photography characterized by laminating an adhesion processing optical-absorption film or an optical-absorption binder film from an adhesive layer or optical-absorption adhesive layer side.

[Claim 12] The production technique of the dry plate for penetrated type hologram photography according to claim 11 characterized by a hologram record sensitized material consisting of a photopolymer which has tackiness.

[Claim 13] In the production equipment of the dry plate for penetrated type hologram photography given in 1 term either of the claims 1-10 -- After exfoliating the separator of the hologram record sensitized material film which becomes one [the substrate feed zone which supplies a substrate, and] field of the supplied substrate

from a support film / hologram record sensitized material / separator The 1st lamination device which laminates a hologram record sensitized material film from a hologram record sensitized material side, The adhesion processing optical-absorption film which becomes the field of another side of the supplied substrate from a separator / adhesive layer / optical-absorption film, Or after exfoliating the separator of the optical-absorption binder film which consists of a separator / an optical-absorption adhesive layer / a support film It has the 2nd lamination device which laminates an adhesion processing optical-absorption film or an optical-absorption binder film from an adhesive layer or optical-absorption adhesive layer side. the [the aforementioned 1st lamination device and] -- in the preceding paragraph or the latter part of 2 lamination device Production equipment of the dry plate for penetrated type hologram photography characterized by having the sheet-cut device which is the same as that of a substrate, or cuts into the size not more than it the hologram record sensitized material film with which the separator exfoliated and an adhesion processing optical-absorption film, or an optical-absorption binder film.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] Especially this invention relates to the dry plate for penetrated type hologram photography which prepared the layer which prevents the halation in the case of photography or a duplicate, its production technique, and equipment about the dry plate for penetrated type hologram photography, its production technique, and equipment.

[0002]

[Description of the Prior Art] It roughly divides into a hologram by the relation between the orientation of incidence of regeneration lighting light, and the orientation of an outgoing radiation of the diffracted light, and there are two types of them. When the orientation of incidence of regeneration lighting light and the orientation of an outgoing radiation of the diffracted light become one hologram side, this is called reflected type, for example, is used for a hologram combiner etc. On the other hand, if incidence of the regeneration lighting light is carried out from one hologram side, the hologram to which the diffracted light comes out of an opposite side will be called penetrated type, and will be used for the hologram light filter (for example, refer to Japanese Patent Application No. 12170 [five to]) which consists of a Fresnel-zone-plate-like condensing nature hologram array.

[0003] Although incidence of body light and the reference beam is carried out from the side front of the dry plate for hologram photography in case a penetrated type hologram is taken a photograph of or reproduced in this Since it is reflected with the rear face, the body light and the reference beam which reached the background of the dry plate serve as halation, an unnecessary interference fringe is recorded and the reproducing characteristics of a hologram are made to get worse Usually, the layer (antihalation layer) which absorbs a transmitted laser light is prepared in the rear face of the dry plate for penetrated type hologram photography, and the method of reducing occurrence of the interference fringe [**** / un-] which originates in reflex from a rear face is used for it from the former. As for the antihalation layer, it is common to carry out the application xeransis of the resin solution which melted coloring matter, and to prepare it, for example, what carried out the mixing of a suitable quantity of the coloring matter to the methyl-ethyl-ketone solution of a polyvinyl butyral (PVB) is raised.

[0004]

[Problem(s) to be Solved by the Invention] However, by the conventional technique mentioned above, the application xeransis of the resin solution had to be carried out, while the process is complicated and the productivity was inferior, the application solution turned to the opposite side and there was a trouble of polluting a sensitized material side side. Moreover, in order to remove an antihalation layer completely after record, processes, such as wiping off by the solvent, were also required of the intended use which needs a high air cleanliness class.

[0005] It is offering the dry plate for penetrated type hologram photography which this invention's can be made in view of such a trouble of the conventional technique, and the purpose's can simplify the conventional manufacturing process sharply by making an antihalation layer into the dry film gestalt, and can also be fitted to lamination equipment, its production technique, and equipment.

[0006]

[Means for Solving the Problem] It is characterized by the 1st dry plate for penetrated type hologram photography of this invention which attains the above-mentioned purpose becoming order from a hologram record sensitized material / substrate / adhesive layer / optical-absorption film at least from a body light side and

a reference-beam incidence side.

[0007] In this case, as for a hologram record sensitized material, consisting of a photopolymer which has tackiness is desirable.

[0008] Moreover, as for an optical-absorption film, it is desirable that the optical density in record wavelength becomes two or more from the film by which dyeing processing was carried out.

[0009] Moreover, abbreviation etc. is carried out, a substrate, an optical-absorption film, and its at least one refractive index of an adhesive layer are in the refractive index of a hologram record sensitized material, and its things are desirable.

[0010] Moreover, as for an adhesive layer, being formed possible [sublation after hologram exposure] is desirable.

[0011] It is characterized by the 2nd dry plate for penetrated type hologram photography of this invention becoming order from a hologram record sensitized material / substrate / optical-absorption adhesive layer / support film at least from a body light side and a reference-beam incidence side.

[0012] In this case, as for a hologram record sensitized material, consisting of a photopolymer which has tackiness is desirable.

[0013] Moreover, as for an optical-absorption adhesive layer, it is desirable that tintion processing is carried out so that the optical density in record wavelength may become two or more.

[0014] Moreover, abbreviation etc. is carried out, one [at least] refractive index of its of a substrate or an optical-absorption adhesive layer is in the refractive index of a hologram record sensitized material, and its things are desirable.

[0015] Moreover, as for an optical-absorption adhesive layer, being formed possible [sublation after hologram exposure] is desirable.

[0016] The above production technique of the dry plate for penetrated type hologram photography After exfoliating the separator of the hologram record sensitized material film which supplies a substrate and becomes one field of the supplied substrate from a support film / hologram record sensitized material / separator A hologram record sensitized material film is laminated from a hologram record sensitized material side. The adhesion processing optical-absorption film which becomes the field of another side of the supplied substrate from a separator / adhesive layer / optical-absorption film, Or after exfoliating the separator of the optical-absorption binder film which consists of a separator / an optical-absorption adhesive layer / a support film, it is the technique characterized by laminating an adhesion processing optical-absorption film or an optical-absorption binder film from an adhesive layer or optical-absorption adhesive layer side.

[0017] In this case, it is desirable that a hologram record sensitized material consists of a photopolymer which has tackiness.

[0018] Moreover, the above production equipments of the dry plate for penetrated type hologram photography After exfoliating the separator of the hologram record sensitized material film which becomes one [the substrate feed zone which supplies a substrate, and] field of the supplied substrate from a support film / hologram record sensitized material / separator The 1st lamination device which laminates a hologram record sensitized material film from a hologram record sensitized material side, The adhesion processing optical-absorption film which becomes the field of another side of the supplied substrate from a separator / adhesive layer / optical-absorption film, Or after exfoliating the separator of the optical-absorption binder film which consists of a separator / an optical-absorption adhesive layer / a support film It has the 2nd lamination device which laminates an adhesion processing optical-absorption film or an optical-absorption binder film from an adhesive layer or optical-absorption adhesive layer side. the [the aforementioned 1st lamination device and] -- in the preceding paragraph or the latter part of 2 lamination device It is characterized by having the sheet-cut device which is the same as that of a substrate, or cuts into the size not more than it the hologram record sensitized material film with which the separator exfoliated and an adhesion processing optical-absorption film, or an optical-absorption binder film.

[0019] Since the optical-absorption adhesive layer which prepared the optical-absorption film through the adhesive layer on the field of an opposite side, or was prepared on the support film was made to stick by the adhesive layer, the layer which prevents halation in the case of photography or a duplicate can be easily prepared with the dry film gestalt, and a manufacturing process can be simplified sharply, and it can also be made to suit to lamination equipment in this invention with a body light [of the substrate of the dry plate for penetrated type hologram photography], and reference-beam incidence moreover, the dry plate itself does not have dirt, it can boil an antihalation layer at an easy process after record, and can remove completely

[0020]

[Embodiments of the Invention] Hereafter, the dry plate for penetrated type hologram photography of this invention, its production technique, and equipment are explained based on an example. The lamination of the dry plate for penetrated type hologram photography 10 by this invention is shown in drawing 1 and the drawing 2. A postscript is carried out about the production technique. In drawing 1, it consists of a body light side and a reference-beam incidence side to support film 1 / hologram record sensitized material 2 / substrate 3 / adhesive layer 4 / an optical-absorption film 5, and consists of a body light side and a reference-beam incidence side to support film 1 / hologram record sensitized material 2 / substrate 3 / optical-absorption adhesive layer 6 / a support film 7 in drawing 2. In addition, in actual photography or the duplicate status, the sublation elimination of the support film 1 prepared in hologram record sensitized material 2 front face of the dry plate for penetrated type hologram photography 10 may be carried out, and it may be used.

[0021] Moreover, the hologram record sensitized material film 11 used by this invention in order to produce the dry plate for penetrated type hologram photography 10 of a lamination as shown in the drawing 1 or the drawing 2. As a lamination is shown in drawing 3, it consists of support film 1 / hologram record sensitized material 2 / a separator (sublation film) 12. Moreover, the film which gives optical-absorption nature to the rear face of the dry plate for penetrated type hologram photography 10. The adhesion processing optical-absorption film 13 which consists of separator (sublation film) 14 / adhesive layer 4 / an optical-absorption film 5 as shown in drawing 4 (a), Or as shown in drawing 4 (b), it consists of an optical-absorption binder film 15 which consists of separator (sublation film) 14 / optical-absorption adhesive layer 6 / a support film 7.

[0022] It is desirable that it is the photopolymer material which has tackiness in the base material 3 to use as a hologram record sensitized material 2 of the hologram record sensitized material film 11 shown in drawing 3. Of course, you may be other sensitive material, such as silver salt and pile chromium gelatin. in order to exfoliate alternatively between the support film 1, the peel strength between the hologram record sensitized materials 2, and the hologram record material 2 and the peel strength between separators 12 -- [support film 1 / hologram record sensitized material 2]>= [hologram record material 2 / separator 12]

Naturally don't be in *****.

[0023] As a support film 1, PET film (especially thing of optical grade), a triacetyl-cellulose film, a polypropylene film, a polyethylene film, a polyvinyl chloride film, an acrylic film, a polyvinyl alcohol film, and a polyethylene vinyl alcohol copolymer film are desirable, and various films have a good knockout film etc.

[0024] Although the support film 1 and the same film are applicable as a separator 12, that from which a sublation property is different as compared with the support film 1 is desirable. As a photopolymer sensitized material used as a hologram record sensitized material 2, the photopolymer of Du Pont by which Kamiichi is carried out is raised with the tradename of homme ***** , for example.

[0025] As a substrate 3, it is transparent, and the various materials with rigidity can be applied and various glass substrates, a polycarbonate substrate, an acrylic substrate, etc. are raised. If the need is embraced and the suitable priming for a substrate is given, it is useful to adhesive enhancement. For example, it is possible to use various silane coupling agents, acrylic adhesives, a polyurethane adhesive, etc. after application xeransis, when talking about the case of a glass substrate. A substrate 3 can also be used by making it the dry film gestalt.

[0026] The adhesion processing optical-absorption film 13 shown in drawing 4 (a) is sticking stably during hologram record, and after record needs for there to be no paste remainder etc. and to be able to remove. in order to exfoliate alternatively between the optical-absorption film 5, the peel strength between adhesive layers 4, and an adhesive layer 4 and the peel strength between separators 14 -- [optical-absorption film 5 / adhesive layer 4]>= [adhesive layer 4 / separator 14]

Naturally don't be in *****.

[0027] As an optical-absorption film 5, that to which PET film (especially thing of optical grade), a triacetyl-cellulose film, a polypropylene film, a polyethylene film, a polyvinyl chloride film, an acrylic film, a polyvinyl alcohol film, a polyethylene vinyl alcohol copolymer film, and various films carried out tinction processing of the knockout film etc. is desirable. Although it can divide roughly into what mixed ** pigment, coloring matter, etc. into the film, the thing which dyed the film with ** color, the thing which coated the film with the resin containing ** pigment, and the thing which coated the film with the resin containing ** coloring matter, since pigments are scattered on a tinction film in laser light, it is unsuitable, and it is desirable to use coloring matter. Moreover, it is desirable that the optical density in the wavelength of the record laser light of this optical-absorption film 5 is two or more things.

[0028] Although the support film 1 and the same film are applicable as a separator 14, that from which a

sublation property is different as compared with the support film 1 is desirable. As a binder of an adhesive layer 4, a natural rubber system, a styrene-butadiene system, a polyisobutylene system, an isoprene system, a natural-rubber-latex system, a styrene butadiene latex system (above, rubber system), acrylic, an acrylic emulsion system (above, acrylic), a silicone system (above, silicone system), a styrene-isoprene block-copolymer system, a styrene butadiene block-copolymer system, a styrene-ethylene-butylene block-copolymer system, an ethylene-vinyl acetate copolymer system (above, hot-melt system), etc. And as for the binder of this adhesive layer 4, what adhesion declines by after treatment, such as heating and a UV irradiation, and the optical-absorption film 5 gets and can be removed from a substrate 3 easily without the remainder etc. after hologram exposure is desirable.

[0029] The optical-absorption binder film 15 shown in drawing 4 (b) is sticking stably during record, and after record needs for there to be no paste remainder etc. and to be able to remove. in order to exfoliate alternatively between the support film 7, the peel strength between the optical-absorption adhesive layers 6, and the optical-absorption adhesive layer 6 and the peel strength between separators 14 -- [support film 7 / optical-absorption adhesive layer 6]>= [optical-absorption adhesive layer 6 / separator 14]

Naturally don't be in *****.

[0030] As a support film 7, PET film (especially thing of optical grade), a triacetyl-cellulose film, a polypropylene film, a polyethylene film, a polyvinyl chloride film, an acrylic film, a polyvinyl alcohol film, a polyethylene vinyl alcohol copolymer film, and various films have good grades, such as a knockout film.

[0031] Although the support film 7 and the same film are applicable as a separator 14, that from which a sublation property is different as compared with the support film 1 is desirable. As a binder of the optical-absorption adhesive layer 6, a natural rubber system, a styrene-butadiene system, A polyisobutylene system, an isoprene system, a natural-rubber-latex system, a styrene butadiene latex system (above) A rubber system, acrylic, an acrylic emulsion system (above, acrylic), A silicone system (above, silicone system), a styrene-isoprene block-copolymer system, What carried out tinction processing is raised to a styrene butadiene block-copolymer system, a styrene-ethylene-butylene block-copolymer system, an ethylene-vinyl acetate copolymer system (above, hot-melt system), etc. Although it can divide roughly into the technique of scouring ** pigment, coloring matter, etc., and the technique of dyeing with ** color as the tinction technique, since laser light is scattered about, the pigment is unsuitable, and it is desirable to use coloring matter. And it is desirable that the optical density in the wavelength of the record laser light of this optical-absorption adhesive layer 6 is two or more things. Moreover, as for the binder of this optical-absorption adhesive layer 6, what adhesion declines by after treatment, such as heating and a UV irradiation, and can be removed from a substrate 3 easily without the paste remainder etc. with the support film 7 after hologram exposure is desirable.

[0032] in addition, drawing 1 and the drawing 2 -- setting -- the rate of a tropism of a substrate 3, the adhesive layer 4, the optical-absorption film 5, and the optical-absorption adhesive layer 6 -- the refractive index of the hologram record sensitized material 2, and abbreviation -- an equal thing is desirable when preventing the unnecessary reflex by the interface in the case of photography, and it is desirable that a refractive-index difference is 0.1 or less

[0033] Next, the hologram record sensitized material film 11 of drawing 3, and the adhesion processing optical-absorption film 13 of drawing 4 (a) or the optical-absorption binder film 15 of drawing 4 (b) is laminated to both sides of a substrate 3, and how to produce the dry plate for penetrated type hologram photography 10 of the drawing 1 or the drawing 2 is explained below.

[0034] The conceptual diagram of one example of the lamination equipment for dry-plate 10 production for penetrated type hologram photography which can be used suitable for this invention is shown in drawing 5. The substrate supply cassette and the sign 17 to which a sign 16 supplies a substrate 3 one by one among drawing Hologram record sensitized material film 11 supply roll and the sign 18 The adhesion processing optical-absorption film 13 or optical-absorption binder film 15 supply roll, and the sign 19 The exfoliating sublation roll and the sign 20 a separator 12 The exfoliating sublation roll and the sign 21 a separator 14 The rolling-up roll and the sign 22 which roll round a separator 12 The rolling-up roll and the sign 23 which roll round a separator 14 The lamination roll and the sign 24 which stick on a substrate 3 the hologram record sensitized material film 11 with which the separator 12 exfoliated from the hologram record sensitized material 2 side The lamination roll which sticks on a substrate 3 the adhesion processing optical-absorption film 13 or the optical-absorption binder film 15 with which the separator 14 exfoliated from the adhesive layer 4 or optical-absorption adhesive layer 6 side, As for a sign 25, the hologram record sensitized material film 11 with which the separator 12 exfoliated is stuck on the front-face side of a substrate 3. It is the dry-plate recovery

cassette which collects the dry plates for penetrated type hologram photography 10 with which it comes to stick on the rear-face side the adhesion processing optical-absorption film 13 or the optical-absorption binder film 15 with which the separator 14 exfoliated one by one.

[0035] In such a configuration, the substrates 3, such as glass, are supplied sequentially from the substrate supply cassette 16. When required, suitable surface treatment is beforehand performed to this base material 3. Furthermore, the sublation section which will exfoliate the protection sheet etc. by the time it reaches the position of the lamination rolls 23 and 24, when the laminating of the protection sheet etc. is carried out on surface treatment is prepared. After supplying the hologram record sensitized material film 11 of a lamination as shown in drawing 3 to one field (drawing on) of the supplied substrate 3 from the hologram record sensitized material film supply roll 17 and exfoliating the separator 12 with the sublation roll 19, the lamination roll 23 is supplied. After supplying the adhesion processing optical-absorption film 13 of a lamination as shown in drawing 4 (a), or the optical-absorption binder film 15 of a lamination as shown in drawing 4 (b) and exfoliating the separator 14 with the sublation roll 20 in the field (drawing under) of another side of the supplied substrate 3 from an adhesion processing optical-absorption film or the optical-absorption binder film supply roll 18, the lamination roll 24 is supplied.

[0036] The hologram record sensitized material film 11 supplied to the lamination roll 23 is stuck on the top of a substrate 3 from the hologram record sensitized material 2 side with which it is pressed down with the lamination roll 23, and the separator 12 exfoliated, and the adhesion processing optical-absorption film 13 or the optical-absorption binder film 15 supplied to the lamination roll 24 is stuck on the inferior surface of tongue of a substrate 3 from the adhesive layer [in which it is pressed down with the lamination roll 24, and the separator 14 exfoliated] 4, or optical-absorption In addition, it is also possible for the same position to have the lamination rolls 23 and 24, for both to be shifted although it has drawn so that the upper and lower sides may be laminated simultaneously, and for it to be made to laminate in serial in drawing 5 .

[0037] Thus, the dry plate for penetrated type hologram photography 10 which the hologram record sensitized material film 11, the adhesion processing optical-absorption film 13, or the optical-absorption binder film 15 was stuck on the field of the upper and lower sides of a substrate 3, and was obtained According to the sheet-cut device prepared in the preceding paragraph or the latter part of the above lamination devices in which it does not illustrate Only the films 11 and 13 or 15 is cut into the same size as a substrate 3, or the size not more than it, production is completed, and the dry plate 10 still finally produced is contained in order by the dry-plate recovery cassette 25, and is conveyed by the hologram exposure section. Of course, it is considered when conveying at the following hologram record process as it is, without containing to a cassette 25.

[0038] In the above-mentioned arrangement, although a line of separation does not occur in the sublation roll 19 and 20 positions when the films 11 and 13 or the feed rate of 15, and the feed rate of a substrate 3 are made in agreement and it sends these continuously at a fixed speed, when laminating intermittently by performing the films 11 and 13 or delivery of 15 intermittently, a line of separation will often occur in the sublation roll 19 and 20 positions. This will be based on a binder etc. being unevenly distributed over the sublation section by the tension in a front face, if sublation of separators 12 and 14 stops on the way. Since a line of separation can be substantially brought out of an effective field if it is made to become the integral multiple of the length of a substrate 3 about the pass-line length between the sublation rolls 19 and 20, the lamination roll 23, and 24 when there is a possibility that such a line of separation may occur, it is desirable. Moreover, when the force strong against exfoliating separators 12 and 14 is required, it is effective to make the path of the sublation rolls 19 and 20 as small as possible, and to take as large a sublation angle as possible.

[0039] As mentioned above, although the dry plate for penetrated type hologram photography, its production technique, and equipment of this invention have been explained based on an example, this invention is not limited to these examples, but various deformation is possible for it.

[0040]

[Effect of the Invention] According to this invention, with a body light [of the substrate of the dry plate for penetrated type hologram photography], and reference-beam incidence side, so that clearly from the above explanation [whether an optical-absorption film is prepared through an adhesive layer on the field of an opposite side, and] Since the optical-absorption adhesive layer prepared on the support film was made to stick by the adhesive layer, the layer which prevents halation in the case of photography or a duplicate can be easily prepared with the dry film gestalt, and a manufacturing process can be simplified sharply, and it can also be made to suit to lamination equipment. moreover, the dry plate itself does not have dirt, it can boil an antihalation layer at an easy process after record, and can remove completely

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